Abstract of the Disclosure

Disclosed is a method for forming an MIM capacitor of a semiconductor device, in which a lower electrode is utilized as a dielectric layer of a capacitor. The method comprises the steps of forming a via at a first insulating layer in order to expose a lower metal wire, forming a first barrier layer at a surface of the first insulating layer including the via, forming a metal layer on the first insulating layer in which the first barrier layer is formed, forming a capacitor lower electrode layer after forming a second barrier layer and a third barrier layer on the metal layer, forming a dielectric layer by oxidizing the capacitor lower electrode layer, forming a capacitor upper electrode layer on the dielectric layer, and patterning the capacitor upper electrode layer, the dielectric layer, and the capacitor lower electrode layer, thereby forming the capacitor. By forming the capacitor through oxidizing the lower electrode, it is not required to provide deposition equipment for depositing a dielectric layer having high dielectric constant, so manufacturing cost for the semiconductor device is saved. Since a chamber capable of forming an oxygen atmosphere is formed in lower electrode deposition equipment, the process is performed in one equipment in-situ, so that a process time remarkably reduced. Also, contamination owing to

the substrate movement is minimized, because the process is carried out in one piece of equipment.